Name: Date:

Polynomial Factoring solution (version 639)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 4x + 16 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(4) \pm \sqrt{(4)^2 - 4(1)(16)}}{2(1)}$$

$$x = \frac{-(4) \pm \sqrt{16 - 64}}{2(1)}$$

$$x = \frac{-4 \pm \sqrt{-48}}{2}$$

$$x = \frac{-4 \pm \sqrt{-16 \cdot 3}}{2}$$

$$x = \frac{-4 \pm 4\sqrt{3}\,i}{2}$$

$$x = -2 \pm 2\sqrt{3}\,i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $-6 - 3i$ and $9 + 5i$ in standard form ($a + bi$).**

Solution

$$(-6 - 3i) \cdot (9 + 5i)$$

$$-54 - 30i - 27i - 15i^2$$

$$-54 - 30i - 27i + 15$$

$$-54 + 15 - 30i - 27i$$

$$-39 - 57i$$

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3. **Write function $f(x) = x^3 + 8x^2 + 17x + 10$ in factored form. I'll give you a hint: one factor is $(x + 1)$.**

Solution

	1	8	17	10
-1		-1	-7	-10
	1	7	10	0

$$f(x) = (x+1)(x^2+7x+10)$$

$$f(x) = (x+1)(x+5)(x+2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+5)^2 \cdot (x+1) \cdot (x-2) \cdot (x-5)$$

Sketch a graph of polynomial $y = p(x)$.